

The diagram illustrates a video signal processing system, likely for motion picture compression. It is divided into two main functional blocks by a dashed line.

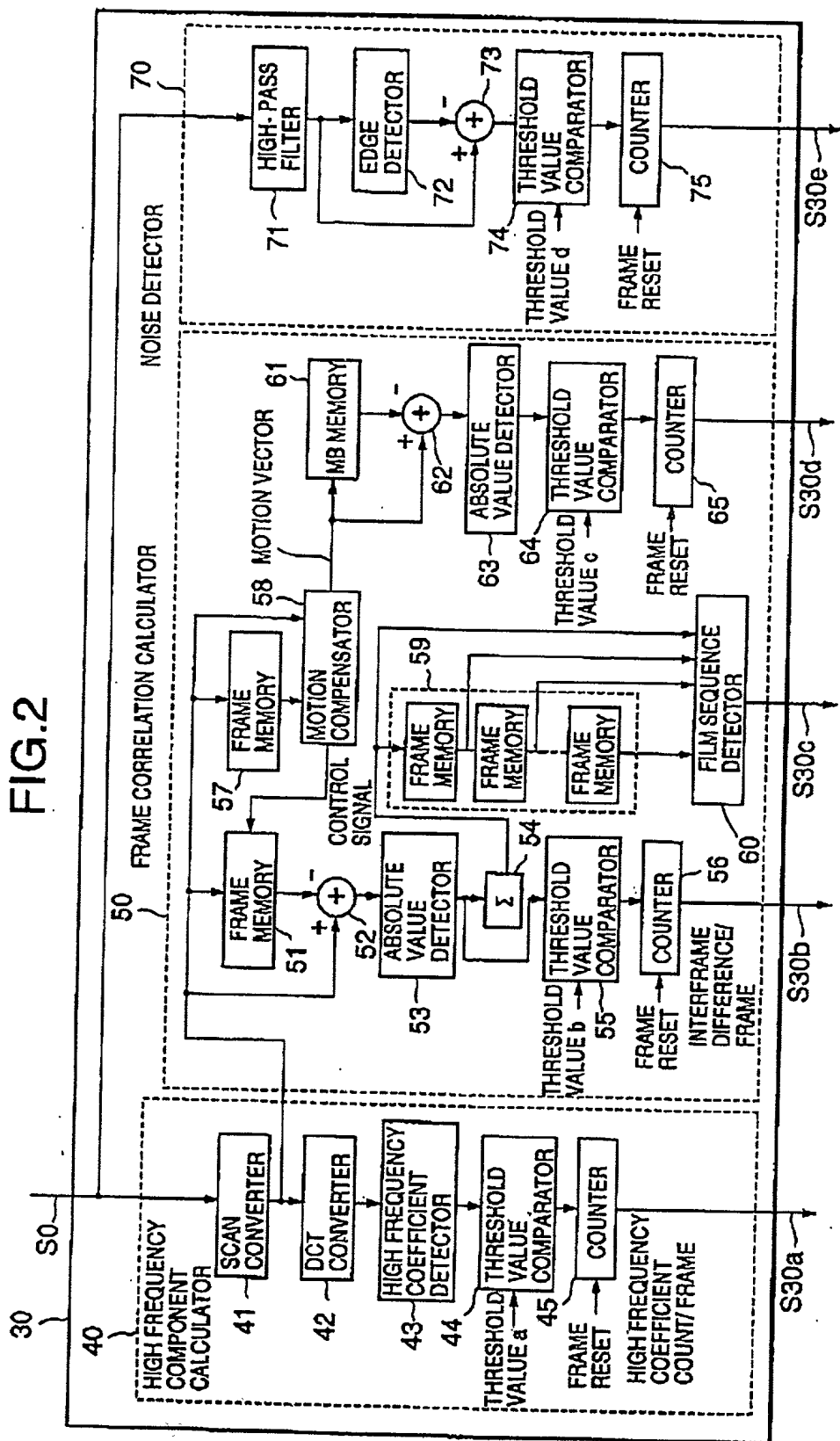
**Top Block (Preprocessing):**

- Input:** Signal  $S_0$  enters the **BANDWIDTH LIMITING FILTER** (1).
- Processing:** The signal passes through the **PEL COUNT CONVERTER** (2), the **FRAME/FIELD DECIMATION UNIT** (3), and the **SCAN CONVERTER** (4).
- Control:** A **PREPROCESS CONTROLLER** (5) receives signals  $S_{31}$ ,  $S_{32}$ ,  $S_{33}$ , and  $S_{34}$  from the preprocessing stages and controls the **THRESHOLD VALUE GENERATOR** (6) and the **PICTURE ANALYZER** (30).
- Analysis:** The **PICTURE ANALYZER** (30) outputs signal  $S_{36}$  to the **THRESHOLD VALUE GENERATOR** (6).
- Thresholding:** The **THRESHOLD VALUE GENERATOR** (6) outputs signal  $S_{35}$  to the **PREPROCESS CONTROLLER** (5).

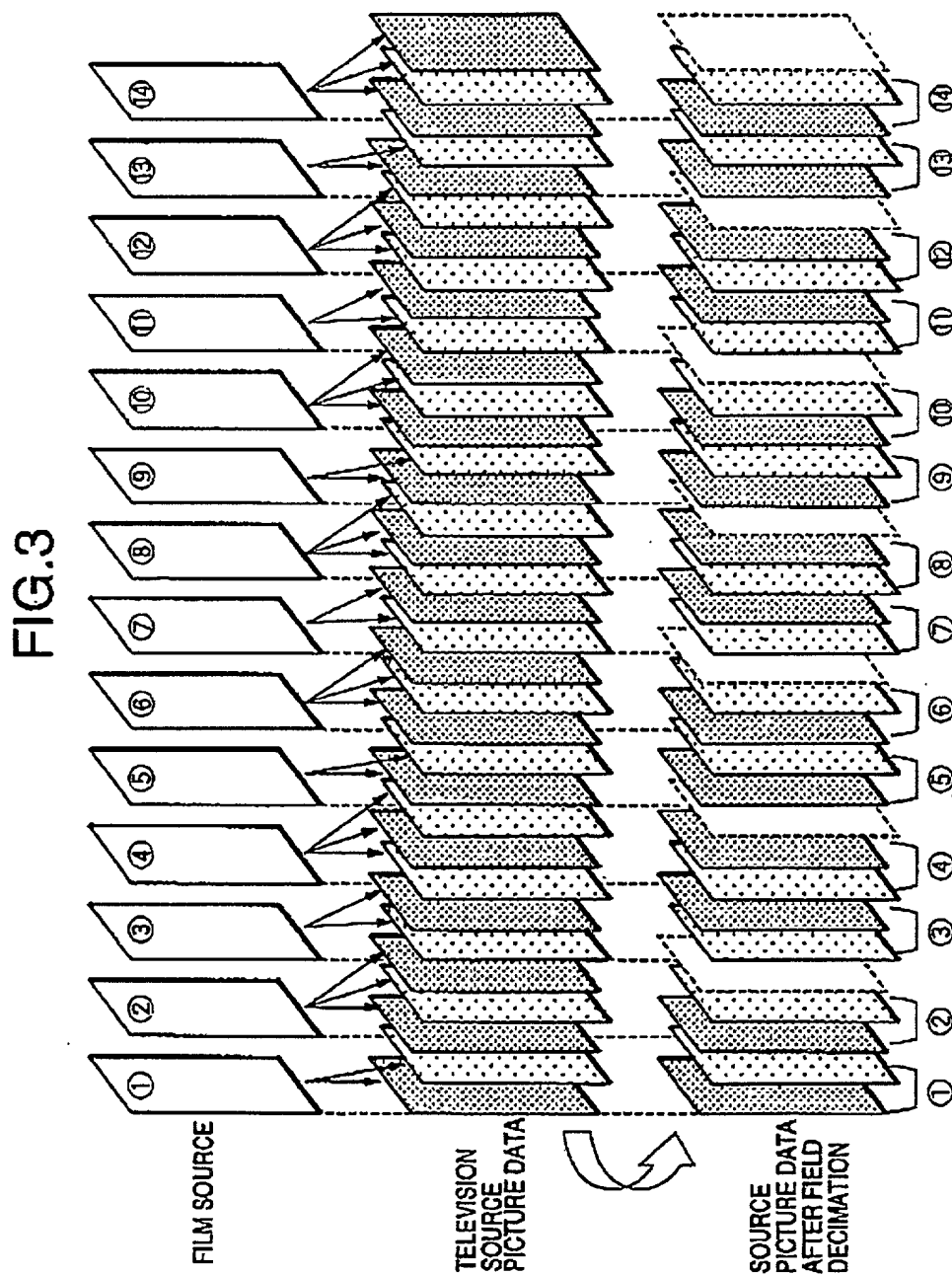
**Bottom Block (Encoding/Decoding):**

- Quantization:** The output of the scan converter (4) is summed with signal  $S_4$  at a junction (+) and then passes through the **QUANTIZER** (14).
- Control:** A **QUANTIZATION CONTROLLER** (13) provides control signals to the **QUANTIZER** (14) and the **VLC** (15).
- Encoding:** The signal from the quantizer (14) passes through the **VLC** (15) and is stored in the **BUFFER** (16).
- Decoding:** The signal is retrieved from the **BUFFER** (16) and passes through the **DEQUANTIZER** (17) and the **INVERSE DCT CONVERTER** (18).
- Summing:** The output of the inverse DCT converter (18) is summed with signal  $S_4$  at a junction (+) to produce signal  $S_{18}$ .
- Memory and Compensation:** Signal  $S_{18}$  is stored in the **IN-LOOP FRAME MEMORY** (19). The **MOTION COMPENSATOR** (20) receives signals from the **IN-LOOP FRAME MEMORY** (19) and the **PREPROCESS CONTROLLER** (5) to produce the final output signal  $S_{20}$ .

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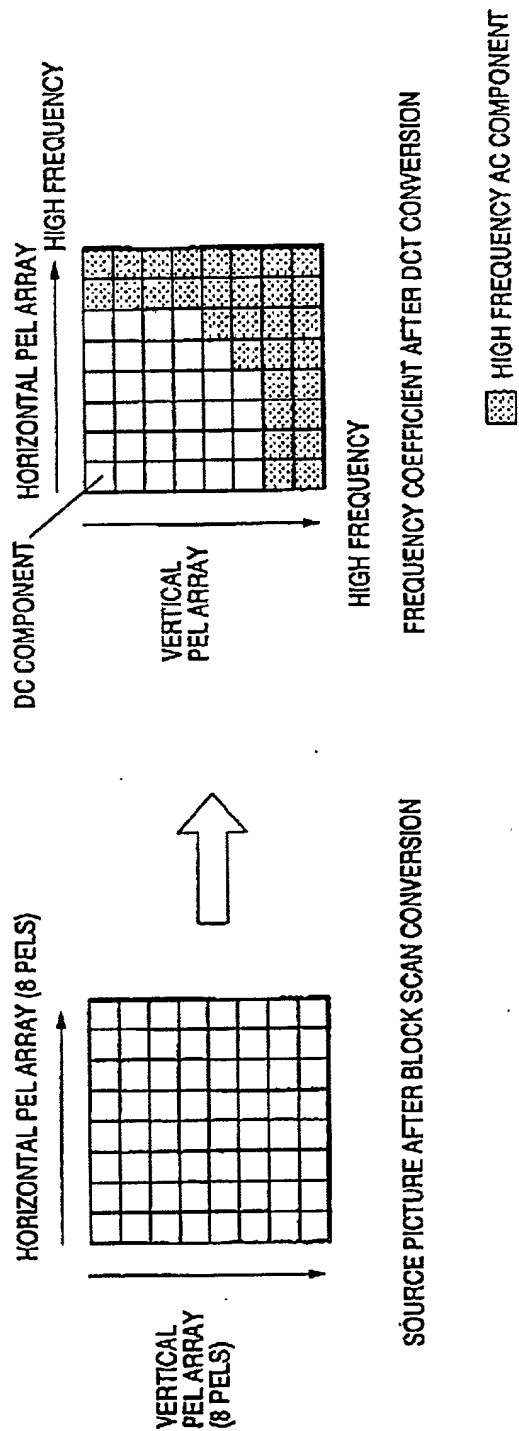


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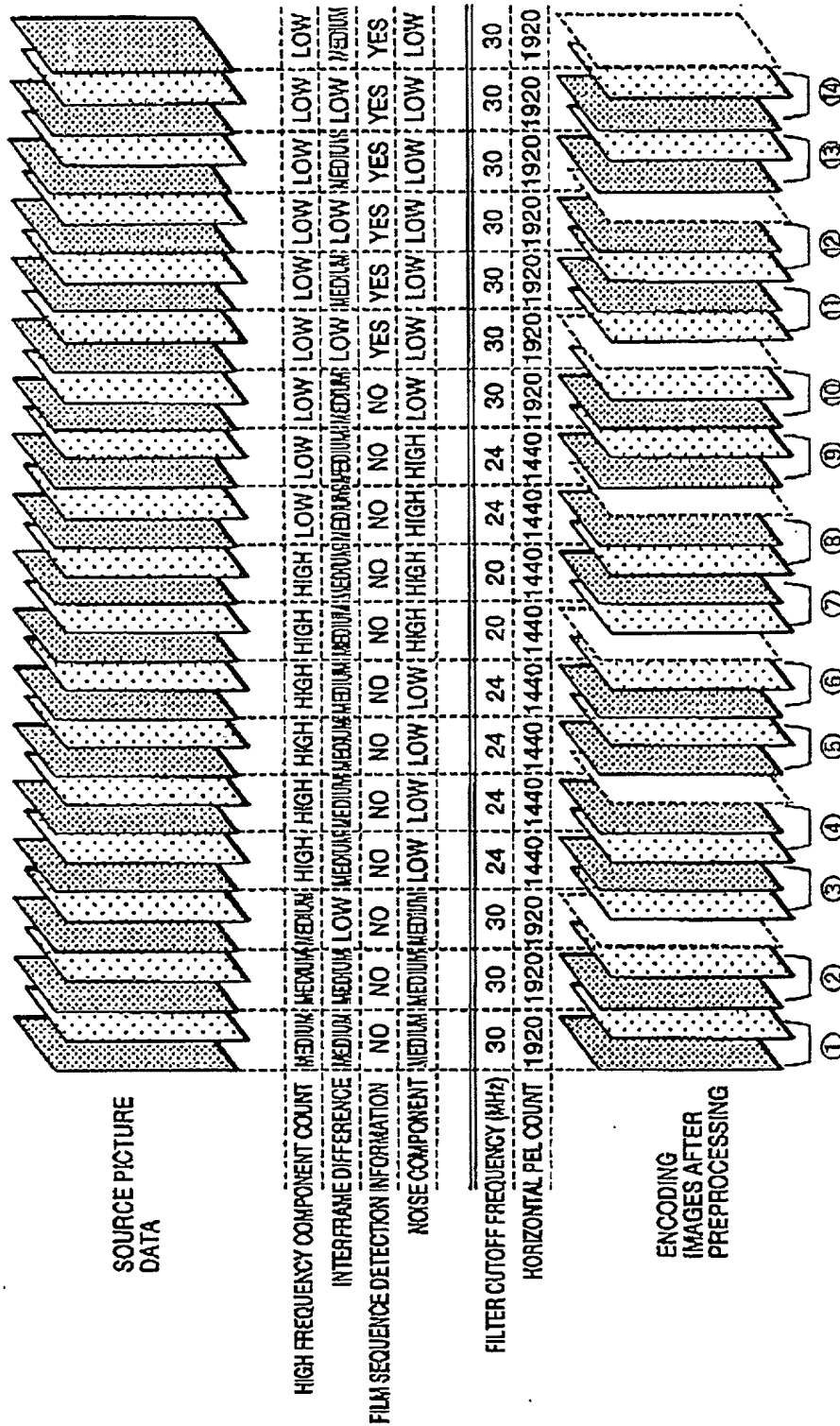
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FIG.4



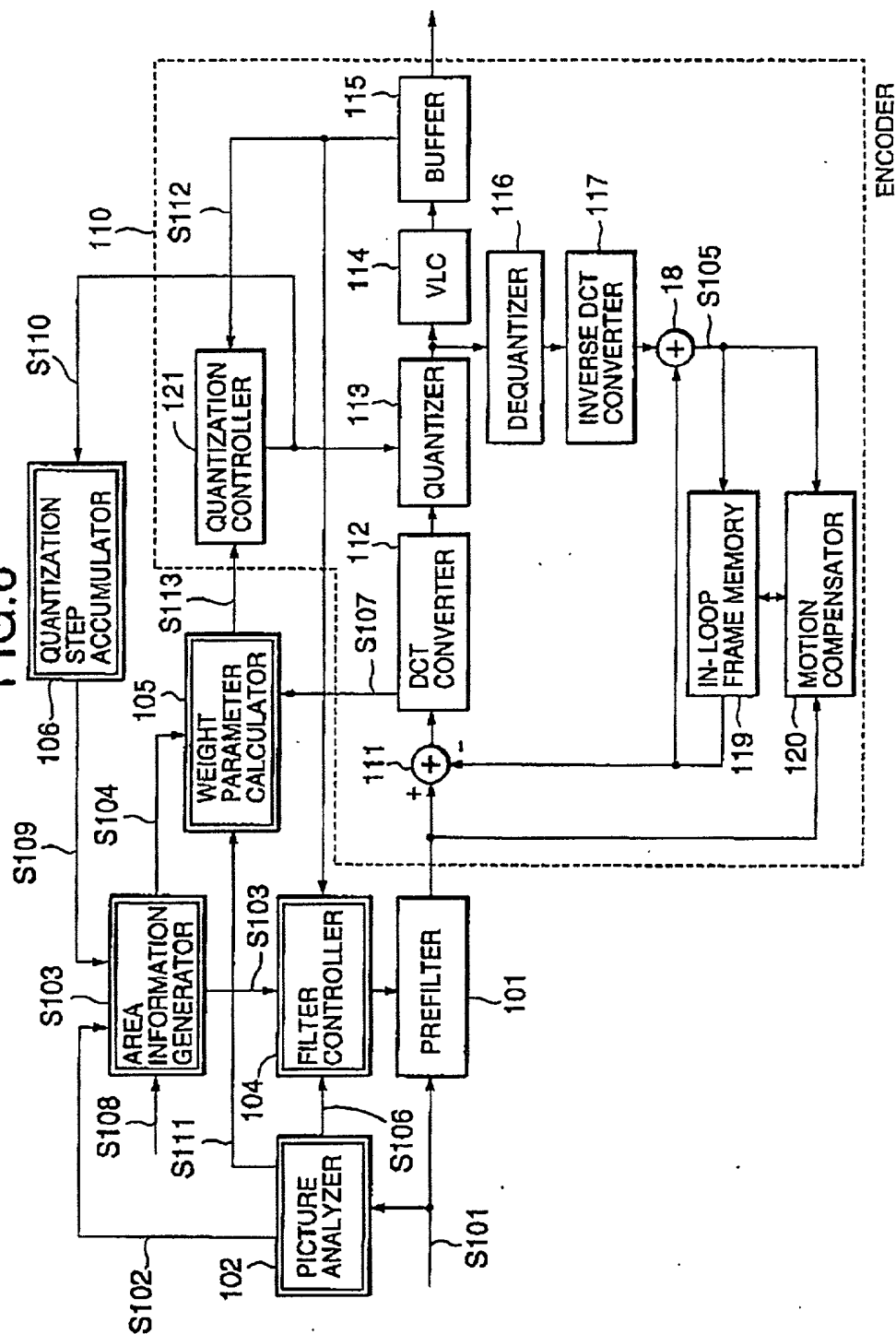
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FIG.5



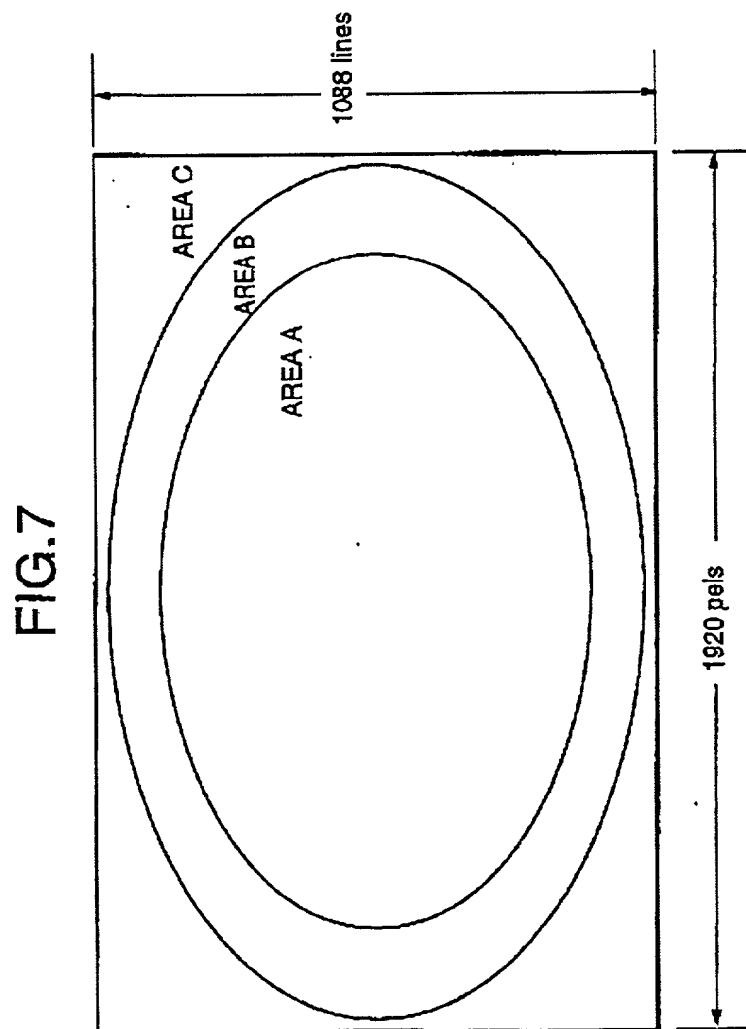
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FIG. 6



ENCODER

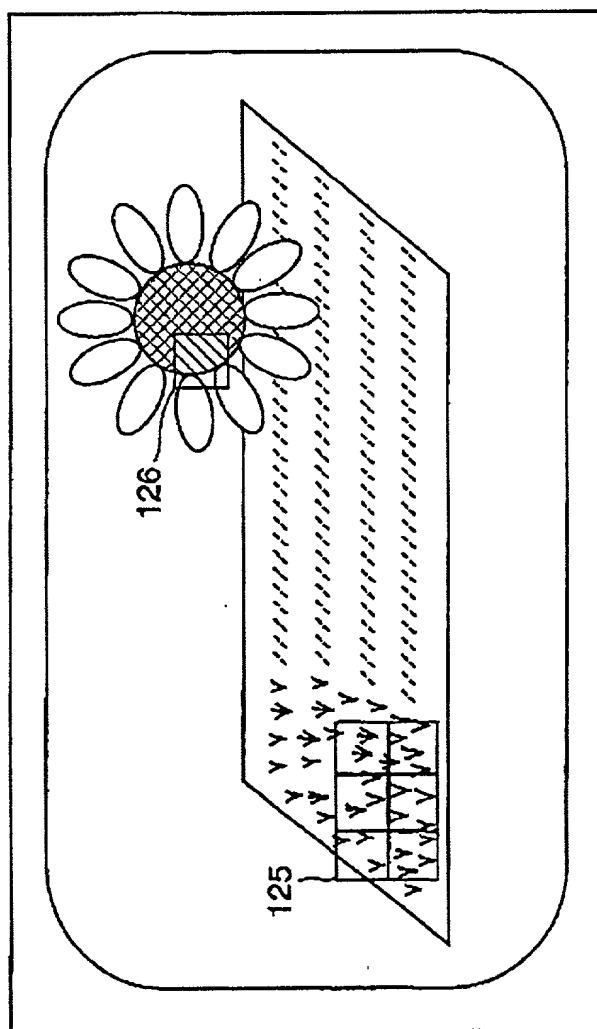
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FIG.8

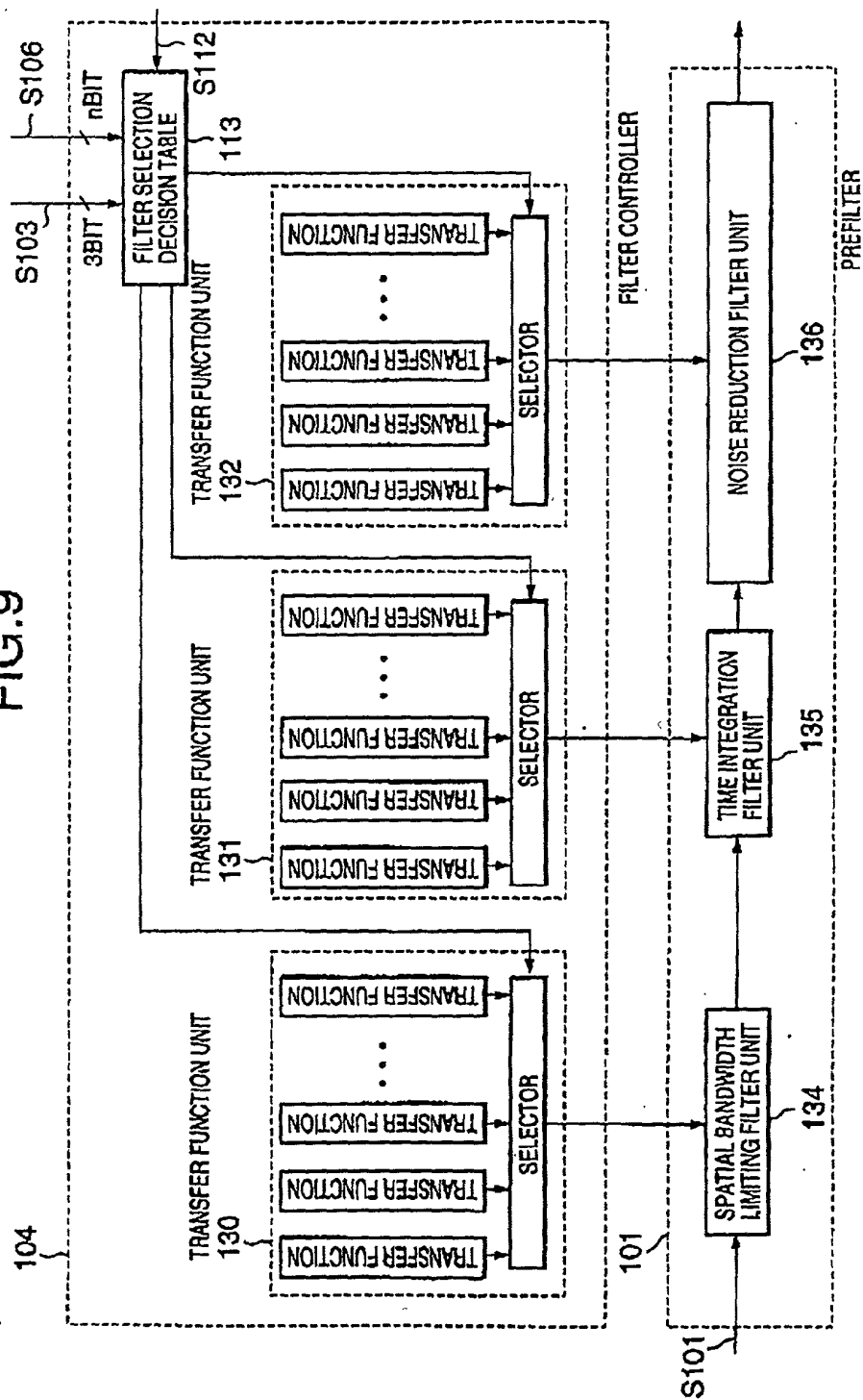


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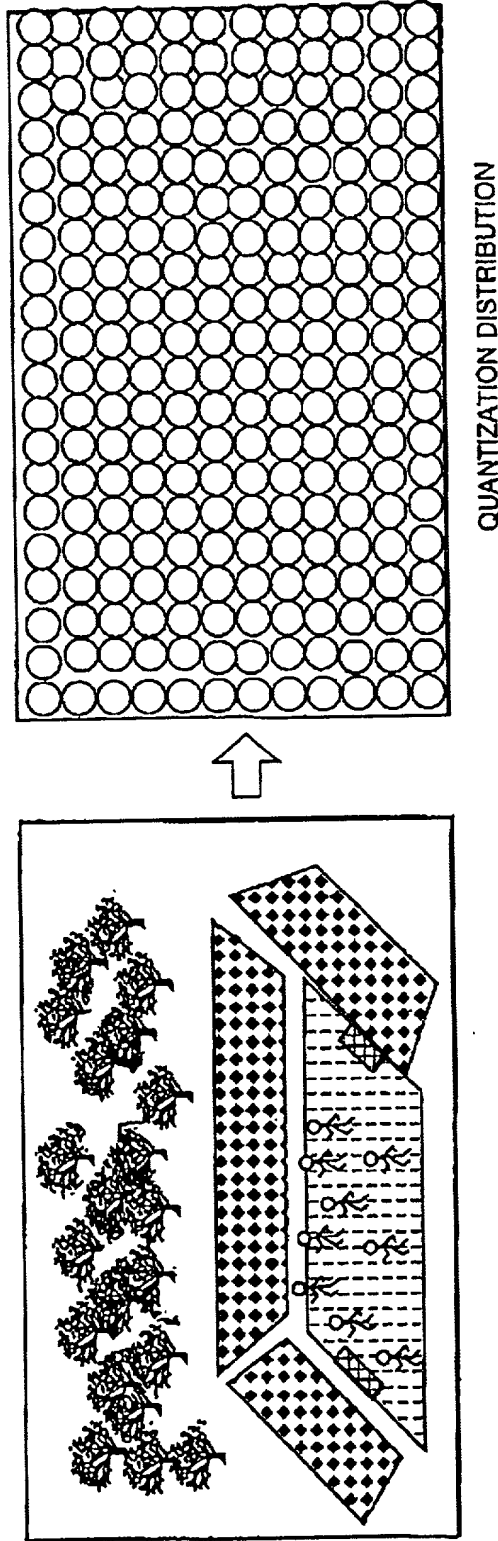
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FIG.9



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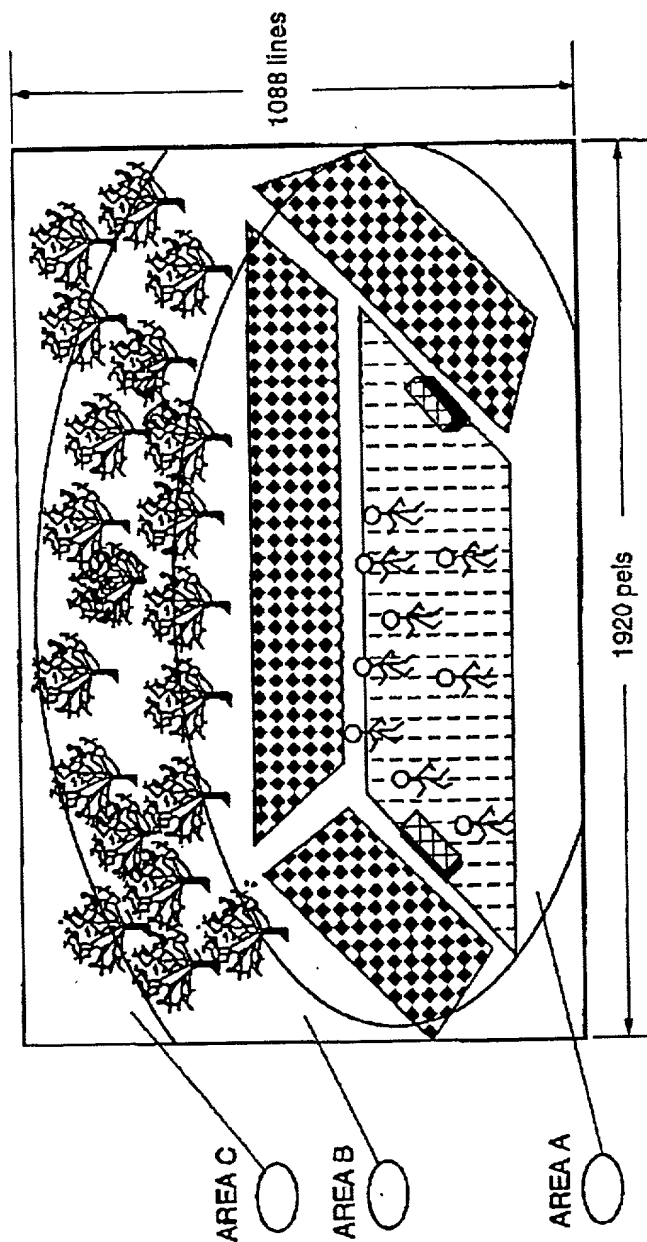
FIG.10



402230-4246663

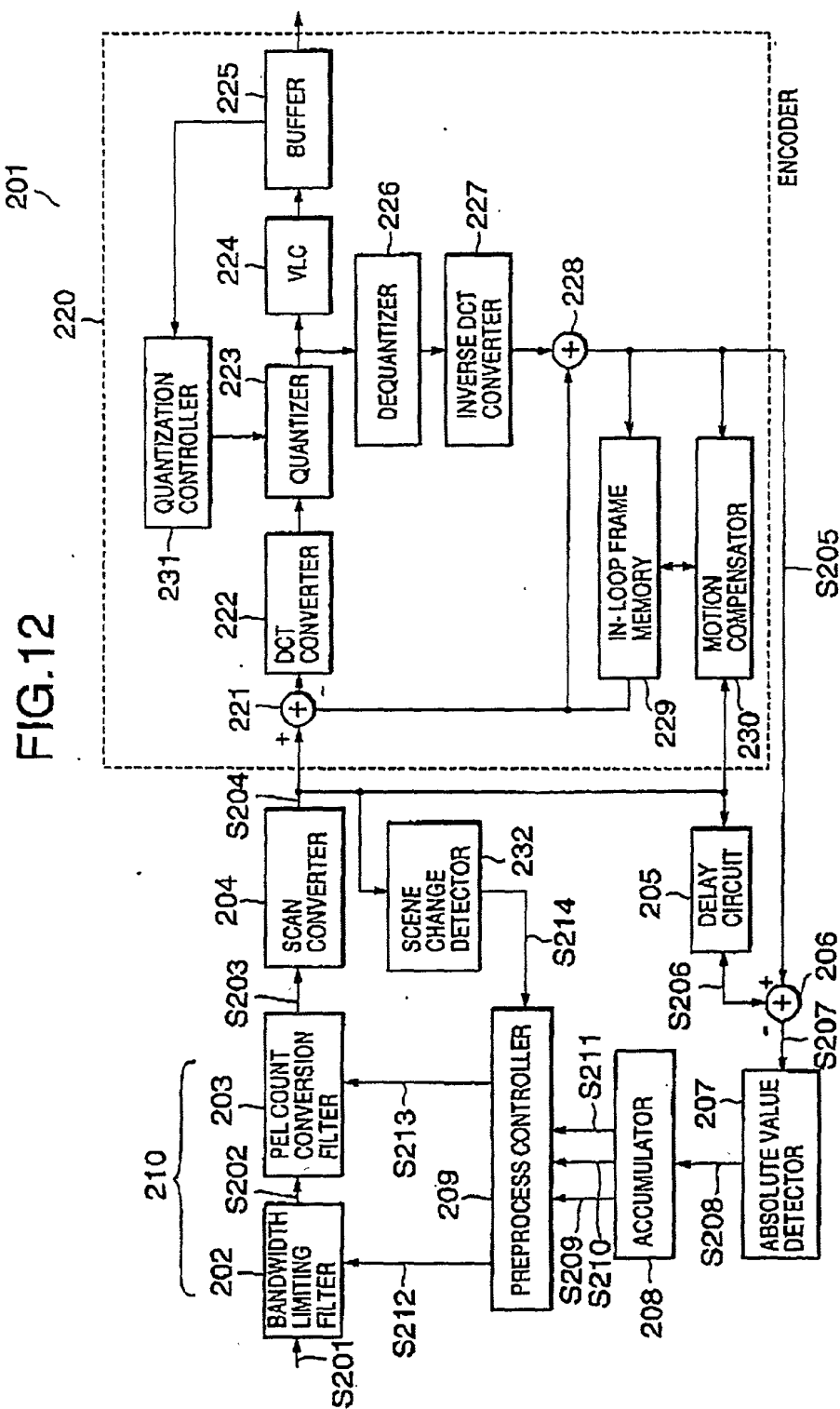
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FIG.11



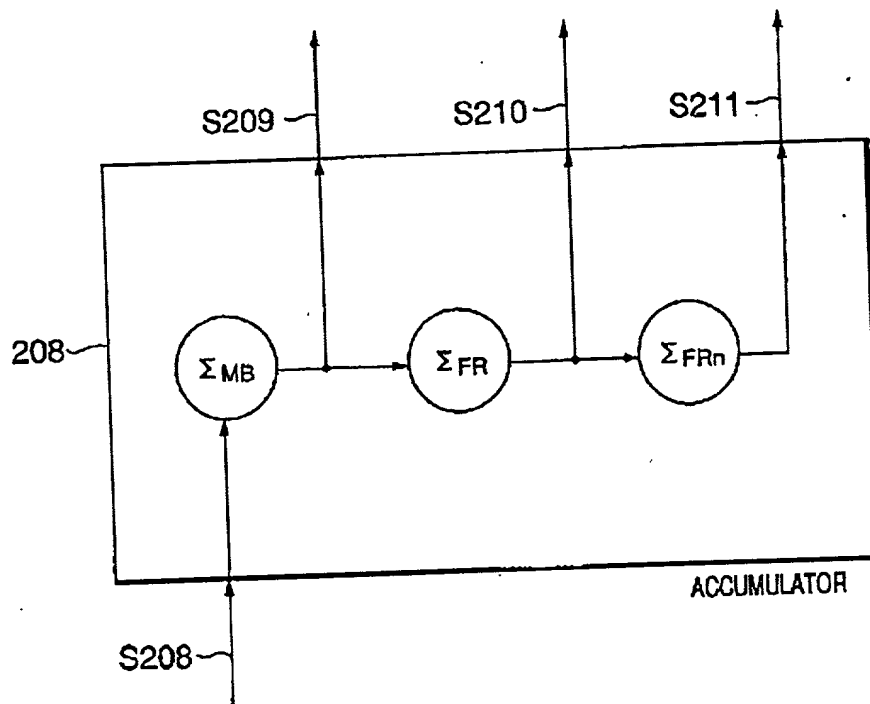
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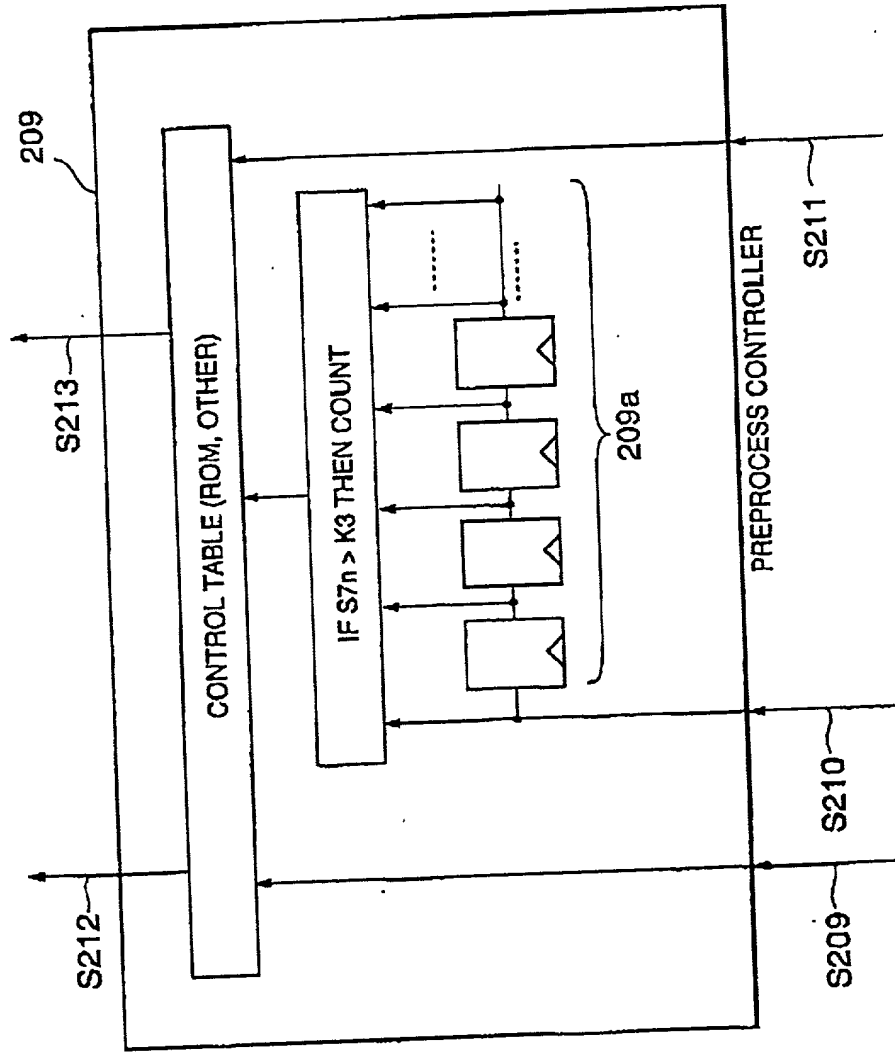
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FIG.13



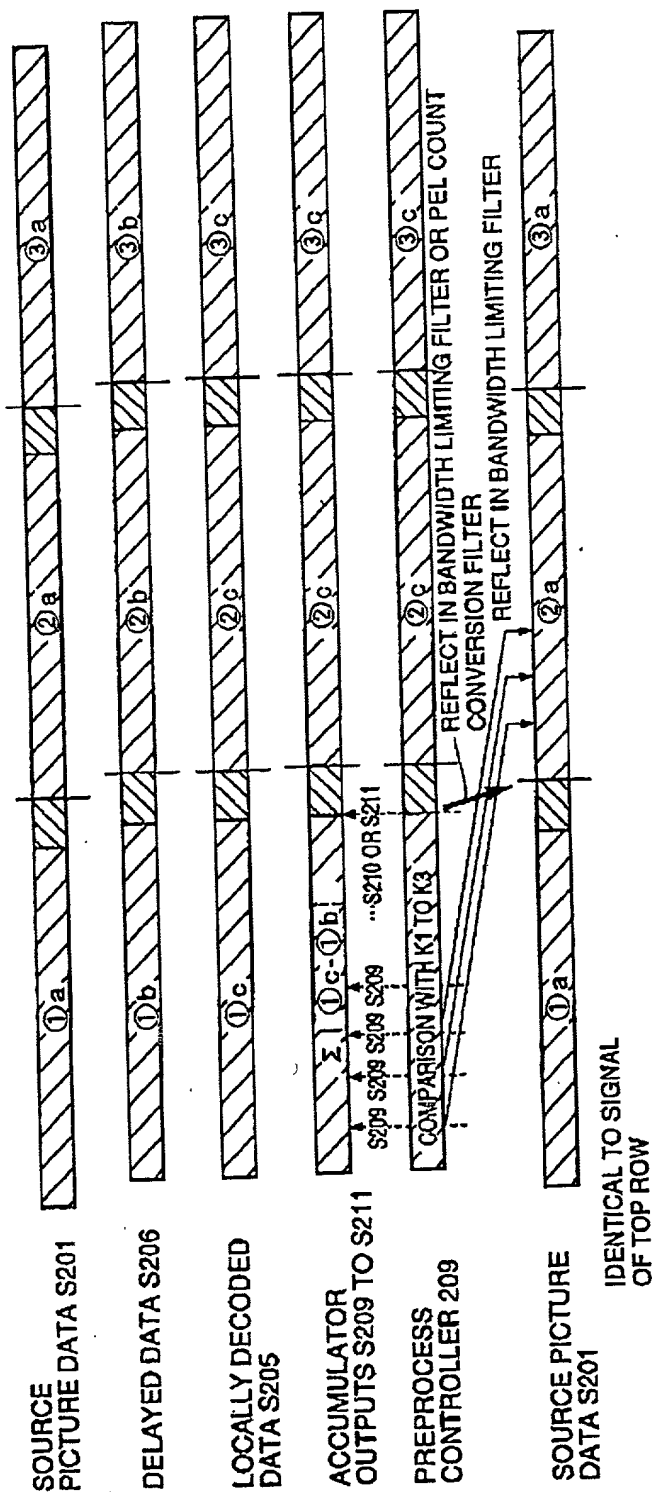
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FIG.14



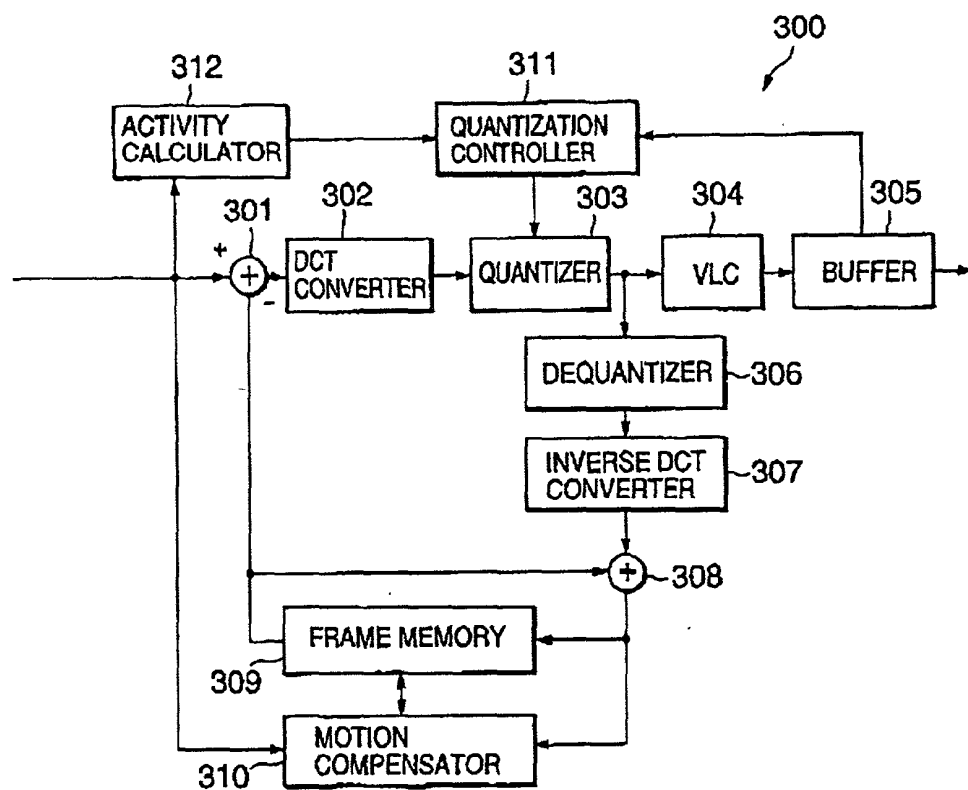
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FIG.15



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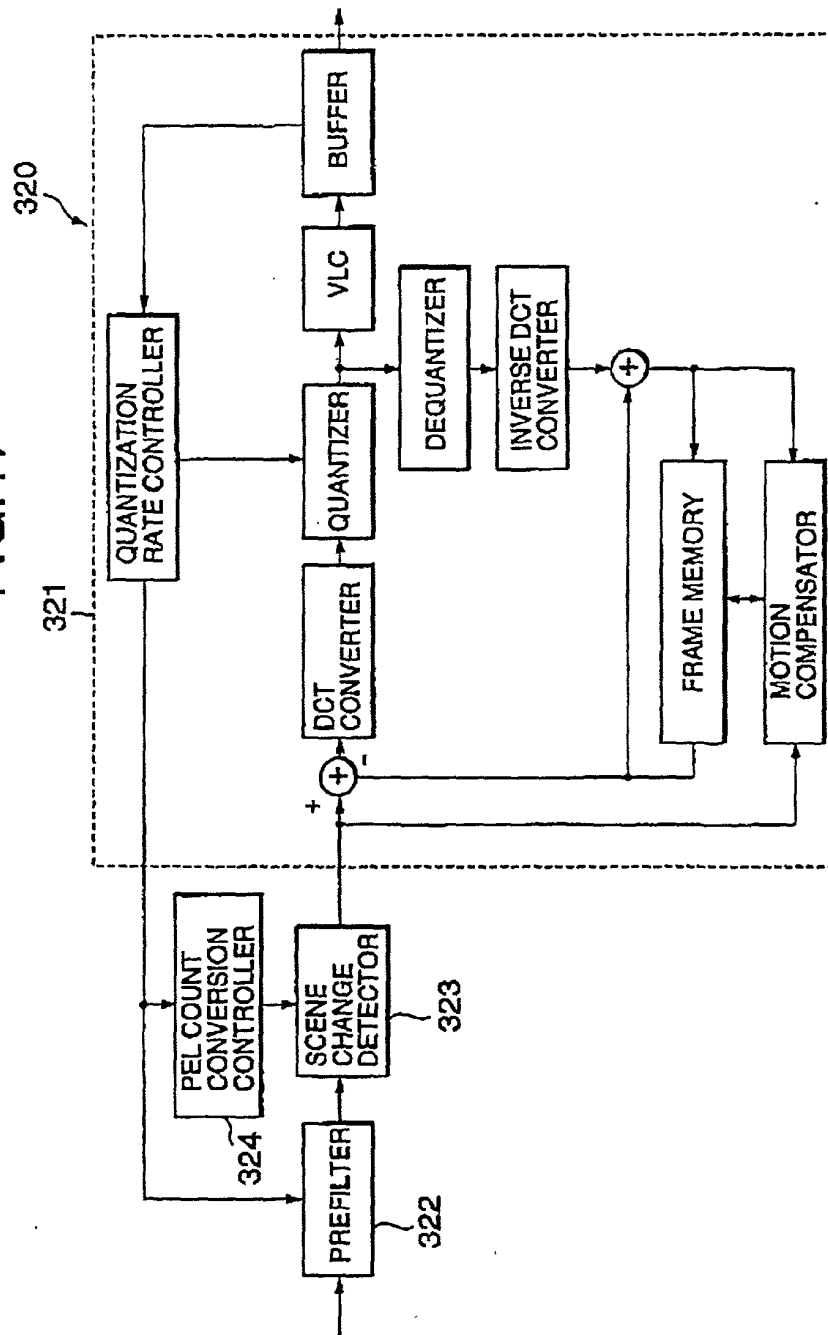
FIG.16



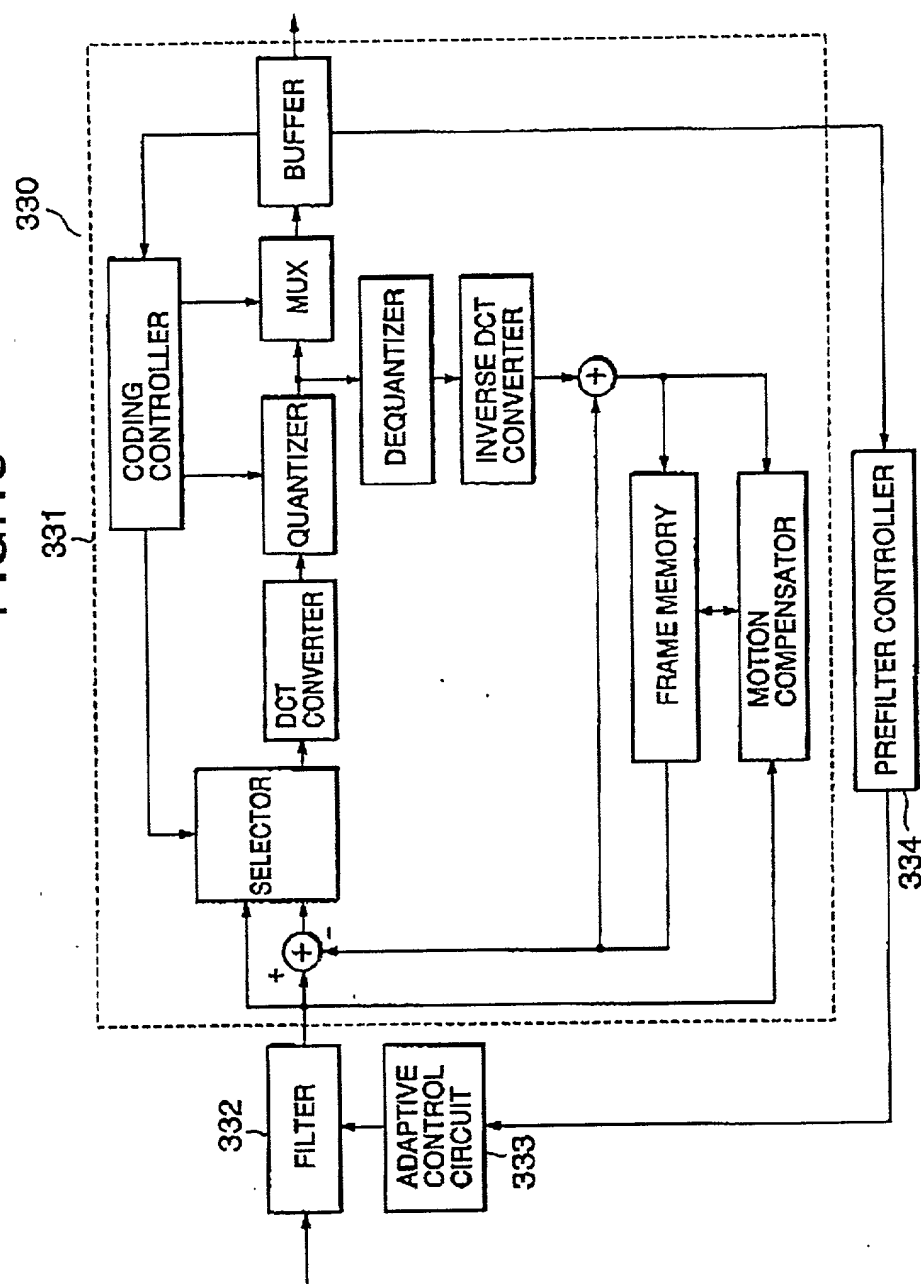


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FIG. 17



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FIG.19

